

# 2 Facility Safety

**One of your most important responsibilities** as a lifeguard is to help ensure that your facility is safe. You do this, in part, by having rescue equipment immediately available, conducting routine safety checks, taking appropriate action during severe weather and being familiar with facility rules. Management also has a role to play, which includes keeping the facility in compliance with the law and making sure that lifeguards are doing their jobs correctly.

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# 2-1 RESCUE EQUIPMENT

Aquatic facilities must have the appropriate rescue equipment available for emergency response and in proper working order at all times. Using rescue equipment makes a rescue safer for both you and the victim. You also must have immediate access to communication devices used at your facility to activate an emergency action plan (EAP), which may include a whistle, megaphone, radio, call box, intercom, telephone, flag or other signaling equipment.

As a lifeguard, you must always wear or carry certain equipment so that it is instantly available in an emergency. The primary piece of rescue equipment used to perform a water rescue is the rescue tube. Another piece of equipment that must be immediately accessible is the backboard, which is used to remove victims from the water. Some facilities, like waterfronts, may use specific or specialty rescue equipment to meet the needs of their particular environments.

## Equipment That You Wear or Carry

To respond quickly and appropriately to an emergency, a rescue tube, resuscitation mask and gloves must be instantly available. The best way to ensure this is to always keep the strap of the rescue tube over your shoulder and neck and wear a hip pack containing the gloves and resuscitation mask (Figures 2-1, 2-2, 2-3). You should wear the hip pack at all times, even when not on surveillance duty.



Figure 2-1 | Resuscitation mask, gloves and whistle.

## Rescue Tubes

The rescue tube is used at pools, waterparks and most non-surf waterfronts. It is a 45- to 54-inch vinyl, foam-filled tube with an attached tow line and shoulder strap. A rescue tube is capable of keeping multiple victims afloat.

When performing patron surveillance, always keep the rescue tube ready to use immediately.

- Keep the strap of the rescue tube over the shoulder and neck.
- Hold the rescue tube across your thighs when sitting in a lifeguard chair or across your stomach when standing.
- Hold or gather the excess line to keep it from getting caught in the chair or other equipment when you move or start a rescue.



Figure 2-2 | The rescue tube is used at pools, waterparks and most non-surf waterfronts.

## Resuscitation Masks

A resuscitation mask is a transparent, flexible device that creates a tight seal over the victim's mouth and nose to allow you to breathe air into a victim without making mouth-to-mouth contact. All masks should have a one-way valve for releasing exhaled air. Some masks also have an inlet for administering emergency oxygen. Masks come in different sizes to ensure a proper fit and tight seal on adults, children and infants.

## Gloves

Disposable (single-use) gloves are used to protect employees that may be exposed to blood and other potentially infectious material (OPIM). Gloves should be made of non-latex materials, such as nitrile. Gloves also should be powder free.

## Whistle

Whistles are important signaling devices for lifeguards. They are used to activate their facility's EAP, and get attention of other members of the safety team as well as patrons for policy enforcement. Whistles should be loud, made of a material that will not rust and have breakaway lanyards.



Figure 2-3 | It is important to wear your lifeguard gear properly.

## Equipment You Can Easily Reach

Other first aid and rescue equipment should be easily accessible for emergency use. This additional equipment may include backboards, rescue buoys, other personal protective equipment (PPE), other resuscitation equipment, an automated external defibrillator (AED), first aid supplies and rescue boards.

### Backboards

A backboard (Figure 2-4) is the standard piece of equipment used at aquatic facilities to remove victims from the water when they are unable to exit the water on their own or when they have a possible injury to the head, neck or spine. Some backboards have runners on the bottom that allow the board to slide easily onto a deck or pier. A backboard must have straps to secure a victim in cases of head, neck or spinal injury, in addition to a device for immobilizing the head.

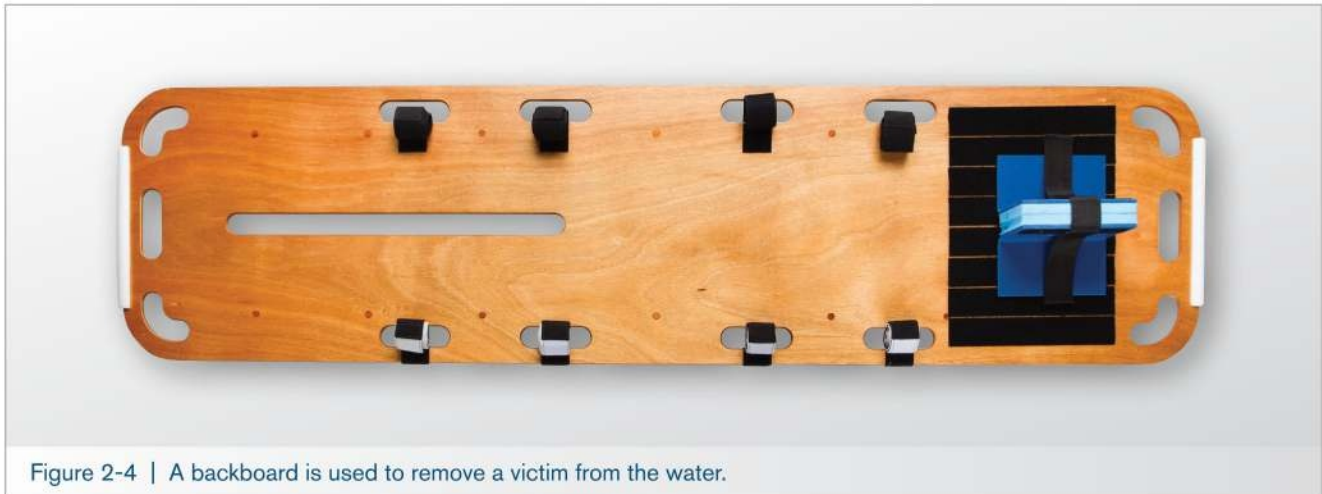


Figure 2-4 | A backboard is used to remove a victim from the water.

### Rescue Buoys

A rescue buoy (Figure 2-5), also known as a rescue can or torpedo buoy, often is the primary piece of rescue equipment used at waterfronts and surf beaches. Most rescue buoys are made of lightweight, hard, buoyant plastic and vary in length from 25 to 34 inches. Molded handgrips along the sides and rear of the buoy allow the victim to keep a firm hold on the buoy. Rescue buoys are buoyant enough to support multiple victims.

### Personal Protective Equipment

Personal protective equipment (PPE) is the specialized clothing, equipment and supplies used to prevent you from coming into direct contact with a victim's body fluids. In addition to gloves and resuscitation masks, other PPE may be available at your facility, including gowns, masks, shields and protective eyewear. A blood spill kit should also be available to safely clean up blood.



Figure 2-5 | Rescue buoys are often used at waterfronts.



## Bag-Valve-Mask Resuscitators

A bag-valve-mask (BVM) resuscitator is a hand-held device (Figure 2-6) attached to a resuscitation mask that is used to ventilate a victim in respiratory arrest or when performing CPR. BVMs come in various sizes to fit adult, children and infants. The appropriately sized BVM should be used based on the size of the victim. Using a BVM requires two rescuers: one to maintain a tight seal for the mask and one to squeeze the bag.



Figure 2-6 | A BVM attaches to a resuscitation mask.

## Automated External Defibrillators

An AED (Figure 2-7) is a portable electronic device that analyzes the heart's rhythm and can deliver an electrical shock, which helps the heart to re-establish an effective rhythm. This is known as defibrillation. It is used in conjunction with CPR on unconscious victims with no obvious signs of life (movement and breathing). An AED should be available at your facility.



Figure 2-7 | An AED analyzes the victim's heart rhythm.

## Other Resuscitation Equipment

In addition to resuscitation masks, other resuscitation equipment is effective in responding to breathing and cardiac emergencies. Use of all of the following supplemental resuscitation equipment is not covered in the Lifeguarding course and requires additional training. This equipment may or may not be used at your facility:

- **Oxygen cylinders and delivery devices.** In a breathing or cardiac emergency, oxygen cylinders and delivery devices (Figure 2-8) are used to administer emergency oxygen to the victim.
- **Suctioning devices.** Suction devices (Figure 2-9) are used to remove fluids and foreign matter from the victim's upper airway. There are two types of suctioning devices: manual suctioning units are operated by hand while mechanical suctioning units are electrically powered
- **Airways.** Oropharyngeal and nasopharyngeal airways come in a variety of sizes and are used to help maintain an open airway in a nonbreathing victim. They do this by keeping the tongue away from the back of the throat during resuscitation.



Figure 2-8 | A lifeguard assists with breathing.



Figure 2-9 | Manual suction devices remove fluids from the upper airway.

## First Aid Kit and Supplies

An adequate inventory of first aid supplies (Figure 2-10) must be available at all aquatic facilities. Common contents of a first aid kit include items used to treat bleeding and wounds and to help stabilize injuries to muscles, bones and joints. Ice packs and rescue blankets also may be included since they may help to treat heat- and cold-related emergencies. Your state or local health department may establish specific requirements for the contents of your first aid kit.



Figure 2-10 | A first aid kit must be at all aquatic facilities.

## Rescue Boards

Some waterfronts use rescue boards (Figure 2-11) as standard equipment. Rescue boards are made of plastic or fiberglass and may include a soft rubber deck. They are shaped similarly to a surf board but usually are larger to accommodate a lifeguard plus one or more victims. Rescue boards are fast, stable and easy to use. They may be used during rescues to quickly paddle out long distances. They also may be used by lifeguards as a patrolling device, with the lifeguard paddling along the outer boundary of the swimming area.



Figure 2-11 | Rescue boards are standard at some waterfronts.

## Ring Buoys, Reaching Poles and Shepherd's Crooks

A ring buoy, reaching pole and shepherd's crook (Figure 2-12) often are required by the health department for swimming pools and waterparks. This equipment is not typically used by lifeguards to perform the professional rescues taught in this course. This equipment usually is used by untrained bystanders. If your facility has any of these items, you should learn how to use them.



Figure 2-12 | Ring buoys and shepherd's crooks are typically used by untrained bystanders.



# 2-2 FACILITY SAFETY CHECKS

Facility safety checks (Figure 2-13) are the primary tool used by aquatic facility staff to ensure overall safety for their facilities. These checks may be performed by lifeguards or by staff that are trained to handle facility operations and maintenance, or by a combination of both. A lifeguard supervisor or facility manager will instruct you about the specific procedures for your facility. You should never perform safety checks while also performing patron surveillance. If you identify an equipment problem during your surveillance or if a problem is reported to you, notify a lifeguard supervisor or another lifeguard who is not performing surveillance. If the condition is hazardous, follow your facility protocols and stop patrons from using the equipment or prohibit them from entering a potentially hazardous area.

Safety checks are conducted before the facility is opened, during daily operations and at closing. Checks conducted before the facility is opened may include a physical inspection of all features, such as a test ride of all attractions. If you find an unsafe condition, you should correct the condition before the facility opens, if possible. If you cannot correct the problem, you should inform a supervisor immediately. If the condition is serious, the supervisor or facility manager may close or delay the opening of the facility, attraction or area until the condition is corrected. Signs, ropes or cones can keep patrons away from an area of the facility not open to the public. Inform other lifeguards about the hazard so that they can direct patrons away from the area. You also should record incidents in the daily log or on the appropriate form or report.



Figure 2-13 | Report any unsafe conditions when performing routine safety checks at your facility.

## ✓ TYPICAL ITEMS FOUND ON A FACILITY CHECKLIST

The facility safety checklist should include the status of the following items and any action required.

### Equipment:

Verify that all equipment is in good working order and a sufficient amount of it is available in the proper locations.

#### RESCUE EQUIPMENT

- Rescue tubes and/or buoys
- Rescue board
- Non-motorized craft
- Motorized craft
- Masks and fins
- Reaching pole
- Ring buoy

#### FIRST AID EQUIPMENT

- Hip packs
  - Resuscitation masks
  - Disposable gloves
  - First aid supplies
- Backboard(s) with head immobilizer and straps
- First aid kit
- AED(s)
- Suctioning equipment
- Emergency oxygen delivery system

#### SAFETY EQUIPMENT

- Lifeguard stands/stations
- Communication devices — whistles, radios, emergency stop(s)
- Telephone — directions for emergency calls posted
- PPE — extra gloves, gowns, face shield, blood spill kit
- Life jackets
- Umbrellas or shade structures
- Sunscreen

### Operational Conditions:

As applicable for the environment and facility type:

- Bottom free of hazards
- Water clarity (pools and waterparks should see the bottom)
- Water level
- Water temperature — within specified range
- Air temperature — within specified range
- Weather conditions — safe
- Lighting — underwater and above ground working properly
- Water chemical ranges — within specified range
- Drain covers undamaged and secured
- Suction fittings undamaged and secured
- Circulation system — within range and proper operational condition
  - Flow rates
  - Filter differential
  - Hair/lint strainer
  - Gutter/skimmer baskets

### Risk Management:

In place, visible, secure, clean, ready for use:

- Depth markings clearly visible
- Swim area sections set up with ropes and/or buoys
- Signage in line of sight for patrons
- Fences and barriers, gates and doors secure
- Walkways/decks clear, accessible, nonslip and free of hazards
- Handrails or guardrails secure
- Ladder rungs or steps secure
- ADA accessibility equipment secure and ready for use
- Diving boards — secure and nonslip
- Starting blocks — secure and nonslip
- Floating features — tethered and secure, undamaged
- Fire extinguishers — charged and ready for use
- Emergency exits — clear, accessible with working lights and alarms





## TYPICAL ITEMS FOUND ON A FACILITY CHECKLIST

### Facility Sanitation:

- Clean, nonslip, free of debris and ready for use
- Pool shell — free of algae, free of scum line
- Restrooms/locker rooms
  - Warm, running water
  - Soap
  - Paper products adequately stocked
- First aid station — adequately stocked
- Tables and seating
- Trash receptacles

### Aquatic Attractions:

- Rides and slides — inspected and test run complete
- Rafts, tubes and/or sleds — properly inflated and handles secure
- Landing areas free of rough surfaces and debris
- Water level and flow appropriate for attraction
- Electronic dispatching systems — tested and operating properly

### Administration:

Posted or filed as applicable:

- Zones of surveillance diagrams posted
- Lifeguard rotation plans posted
- EAPs posted
- Safety Data Sheets available
- Staff certifications — copies on file for all staff
- Training records — on file
- In-service training records-on file
- Water quality test results
  - Daily results posted
  - Records on file
- Rescue and/or incident reports on file
- AED inspection checklist — up to date
- Emergency oxygen system checklist — up to date

### Waterfronts:

- Shoreline is clean and free of sharp objects
- Bottom conditions are free from hazards
- Water conditions are safe for swimming
- Piers are anchored, stable, free from trip or injury hazards
- Lifeguard stands — surrounding area clear of objects

## Specific Areas to Inspect for Safety

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The facility's safety checklist is a guide for performing a safety check. The purpose is to verify that equipment has been tested, is working properly, is ready for use and that the facility is clean and safe for patrons. Your facility should have a checklist specific to its needs. General areas and equipment to inspect include:

- Rescue equipment (hip pack contents, rescue tubes, backboards and first aid supplies)
- Communication equipment
- Pool decks or waterfront shorelines
- Pools, waterfront swimming areas or waterpark attractions
- Locker rooms (dressing areas, shower areas and restrooms)
- Equipment and structures (ladders, diving boards and starting blocks)
- Recreational equipment and play structures

## Inspecting Aquatic Attractions and Features

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Facilities should follow the manufacturer's guidelines for installation, safe inspection, maintenance and use of its various attractions and features (Figure 2-14). Your employer should provide you with a specific set of guidelines and training if you are responsible for these inspections. In some cases, maintenance personnel, rather than lifeguards, will be responsible for inspections. Even if the attraction or feature has been inspected already, stay alert for any problems that may develop, such as loose or rusted bolts; cracks; broken or missing pieces; frayed, loose or mildewed safety nets; unusual noises; and an area with increased frequency of injury to patrons. Mechanical malfunctions can result in raft slippage, conveyor malfunctions, power outages and water flow problems. If water flow stops, rider dispatch must stop immediately.



Figure 2-14 | Facilities should follow the manufacturer's guidelines for various attractions and features.

## Inspecting Ride Vehicles



Figure 2-15 | Safety checks are a primary method of facility surveillance and help prevent injuries to patrons.

Many attractions require the rider to ride an inflated tube, a foam mat, a plastic sled or a multiple-rider vehicle. Visually inspect mats and sleds to make sure that they have no signs of damage and that all handles are intact (Figure 2-15). Check vehicles that require inflation to ensure that they are inflated properly. Vehicles that are under- or overinflated should be taken out of service immediately.

## Hazards at Waterfront Facilities

You should be aware of the specific potential hazards presented by some waterfront facilities. These include underwater hazards, pier formations and changing water conditions.

Dangerous conditions may develop with changing winds, tides and weather. On some days, the

water may be totally calm and flat. On other days, there may be large waves. Checking for potentially hazardous conditions specific to your facility should be covered during your orientation. If it is not, ask your facility management to discuss procedures for any situation for which you do not feel adequately prepared.

### Underwater Hazards

Common underwater hazards may change throughout the day and include:

- Holes in the swimming area
- Sudden drop-offs
- Submerged objects, such as rocks, tree stumps and underwater plants (Figure 2-16)
- Bottom conditions (sand, rock, silt, weeds and mud)
- Slope of the bottom and water depth
- Shells and barnacles
- Broken glass or other sharp objects
- Marine life

You should check for and, if possible, remove underwater hazards. If hazards cannot be removed, swimming areas should be re-positioned away from them. Alternatively, the shape and size of swimming areas may need to be changed to avoid underwater hazards. Floating buoys can be used to mark underwater hazards to warn patrons of their danger.



Figure 2-16 | Remove any underwater hazards at waterfront facilities.



## Pier Formations

Piers in the water often are used for different activities (Figure 2-17, A–D). The following precautions should be taken with piers:

- Ensure that floating piers and rafts are anchored securely.
- Adjust attachment points between floating sections to minimize hazards.
- Be aware of and take steps to eliminate blind spots (obstructed views) caused by piers or rafts.
- Ensure that patrons dive from piers only in designated areas. Check the water depth daily.
- Be aware of bottom and tidal changes before allowing head-first entries.
- Prohibit swimming in fishing areas around piers or adjacent to boat activity.

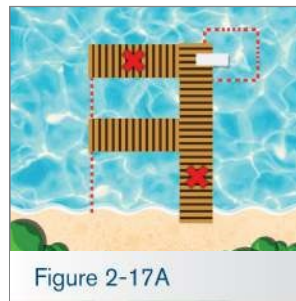


Figure 2-17A

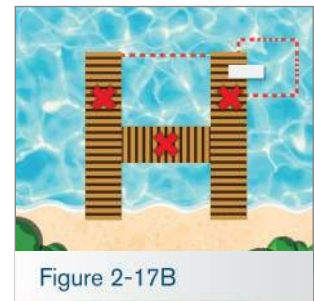


Figure 2-17B

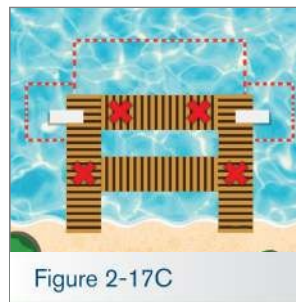


Figure 2-17C

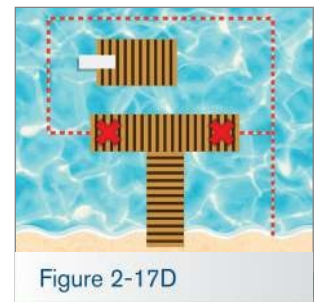


Figure 2-17D

## Changing Water Conditions

Many factors can influence water conditions, which in turn can affect patron safety. These factors include:

- Water depth and currents. Changes in the water level may lead to increased currents that make standing difficult and could sweep swimmers beyond area boundaries. Examples include:
  - A dam that releases water, causing the water depth above the dam to drop and the river depth below the dam to rise.
  - Heavy rainfall that makes a lake or river rise, or a long, dry period that makes it too shallow for diving.
  - Tidal changes.
  - Seiche, which is a standing wave of water that oscillates in large lakes usually created by strong winds and/or large barometric pressure gradients.
  - Sandbars that can move and shift from season to season or from heavy rain that produces strong currents. These changes in the waterfront floor can create unexpected drops or new shallow-water features.

- Water quality. Insufficient flow may lead to stagnant water and compromise water quality.
- Debris or cloudiness in the water.
- Water temperature, which usually is colder early in the summer and after rain. Although surface water may be warm and comfortable, water at a depth of several feet can be much colder. This condition, called a **thermocline**, can cause **hypothermia** (low body temperature).

When dealing with changing water conditions:

- Warn patrons of hazards by using signs, buoys and safety announcements.
- Check for objects that may have washed into the area.
- Check for changes in bottom conditions and water depth.
- Alert patrons to cold water and watch for signs of hypothermia in patrons.
- Check and document scheduled high and low tides in the daily log each morning before opening and plan for changes in water depth.



# RIP CURRENTS

This course is not intended to prepare lifeguards to work at surf waterfront environments; however, it is important for all lifeguards to understand the dangers of rip currents and to help educate others about these dangers.

A rip current is a strong channel of water that flows offshore from a surf beach, and often extends well beyond the breaking waves (Figure 2-18). Rip currents are commonly associated with underwater features, such as sandbars. Gaps in the sandbars allow for the water brought in by wave action to be channeled back out to sea in these rip currents. This is not always the case. They also can occur near physical structures, such as piers, groins and natural outcroppings. Rip currents may exceed a speed of 8 feet per second, which even the strongest swimmer may not be able to overcome.

According to the National Oceanic and Atmospheric Administration, common indicators of a rip current include:

- A channel of churning, choppy water.
- An area having a noticeable difference in water color from the adjacent water.
- A line of foam, seaweed or debris moving steadily away from shore.
- A break or flat area in the incoming wave formation.

Although these are good indicators, they are not always present. Rip currents can be very subtle in appearance and hard to spot. While rip currents may occur during strong winds, they can also occur on calm, clear days—the primary cause is incoming waves.

The United States Lifesaving Association (USLA) estimates that each year more than 100 people die by drowning in rip currents. Rip currents have been shown to account for

more than 80 percent of rescues performed by surf lifeguards. This makes rip currents one of nature's most deadly natural forces. Some beaches and waterfront areas use color-coded flags to indicate the presence of hazardous water conditions and rip currents. Any time a red or double red flag is visible, stay out of the water; use caution when there is a yellow flag.

The best way to survive a rip current is not to fight it by swimming against it, but to swim across it, to one side or the other while parallel to the shore, then swim in to shore when you are out of the current. If caught in a rip current, do not panic. The current will eventually fade at some distance from shore allowing you to swim back in to the side of the rip current. If you need help, signal by calling and waving to those onshore. Always try to swim near a lifeguard at a surf beach.

If you are lifeguarding at a waterfront area where there is the possibility of rip currents, it is critical to receive specialized training to learn how to identify rip currents and to help someone who is caught in them. For more information on rip currents, visit [ripcurrents.noaa.gov](http://ripcurrents.noaa.gov) and [usla.org](http://usla.org).



Figure 2-18

## WATER QUALITY

The quality of water in spas and swimming pools constantly changes. It is affected by many factors, including the concentration of disinfectant in the water; the water's pH level, chemical balance and saturation; air temperature; sunlight; and contaminants from bathers and the environment. All of these factors are important not only for a safe swimming environment but also to ensure crystal-clear water clarity.

Additional training is needed, and a certification in pool operations often is required, to learn how and when to make chemical adjustments to the pool water. If you work at a swimming pool or waterpark, your responsibilities probably will include monitoring the water to make sure that it is safe, clean and clear. You may be asked to assist by periodically testing the water's chlorine or bromine and pH levels. You should receive training on how to properly test the pool water chemistry if this is included in your job responsibilities.

### Disinfectant and pH Levels

Chlorine is one of the most common chemicals used to disinfect pools and spas. When dissolved in pool or hot tub water, chlorine produces a chemical called hypochlorous acid, also known as free chlorine. Free chlorine disinfects and sanitizes the water by killing germs and contaminants. To work most effectively, the free chlorine-to-water ratio should be 2 to 4 parts per million. This concentration of free chlorine, called a residual, should be maintained at all times throughout the water.

Free chlorine is colorless and odorless. However, it reacts with certain contaminants, such as human waste, to create combined chlorines, which are more commonly known as chloramines. Chloramines cause the chlorine-like smell found in indoor pools. Chloramines also can irritate the skin and mucous membranes.

The pH of the pool and hot tub water must be maintained at the appropriate level for free chlorine to be effective and for bathers to be comfortable. As the pH level goes down, free chlorine works better as a disinfectant. However, when the pH drops below 7.2, the water may irritate eyes and skin and corrode pool surfaces and equipment. Human tears have a pH of about 7.5; therefore, the ideal pH in pool and hot tub water is 7.4 to 7.6.

Bromine is another chemical commonly used to kill germs and contaminants in pool and hot tub water. It often is used in hot tubs instead of chlorine because it is more stable in hot temperatures and does not burn away as quickly. It also does not leave a chemical odor in the water.

### Testing and Adjusting

A supervisor, or another staff member trained and certified in pool operations, typically monitors and adjusts chemical levels throughout the day. However, you may be trained to test the chlorine or bromine and pH levels of the water. The water quality will need to be tested and the results recorded at periodic intervals throughout the day. Your facility should have a test kit available that measures free chlorine or bromine and pH levels. Some measure other water-balance levels as well. N,N-diethyl-p-phenylenediamine (DPD) is the most common test chemical used to test for



## WATER QUALITY, CONTINUED

free chlorine or bromine. DPD reacts with chlorine and turns the water test sample shades of light to dark pink. Phenol red is a dye used to test the water's pH. Its color changes from yellow to orange to red based on the pH level. The water test result color is compared with the colors on the test kit.

Your facility will have guidelines for the minimum, maximum and ideal ranges for chlorine or bromine and pH levels for safe swimming. Alert the appropriate staff member immediately if the water test results are not within the proper ranges for safe swimming at your facility. Adjustments may need to be made as soon as possible or the pool or hot tub may need to be temporarily closed until the chemical ranges are correct for safe swimming.

### Waterfront Considerations

Water quality is also important at natural bodies of water. Swimming in unsafe water may result in minor illnesses, such as sore throats or diarrhea or more serious illnesses, such as meningitis, encephalitis or severe gastroenteritis. Children, the elderly and people with weakened immune systems have a greater chance of getting sick when they come in contact with contaminated water. The quality of natural bodies of water can be impacted by pollutants, such as runoff from animal waste, fertilizer, pesticides, trash and boating wastes and especially storm water runoff during and after heavy periods of rain. The Environmental Protection Agency recommends that state and local officials monitor water quality and issue an advisory or closure when beaches are unsafe for swimming.

*Source: "Beaches," accessed September 6, 2011. [epa.gov/beaches](http://epa.gov/beaches)*

## RECREATIONAL WATER ILLNESSES

Illnesses that are spread by swallowing, breathing or contacting contaminated water are called **recreational water illnesses** (RWIs). Typical RWIs include ear aches, rashes and diarrhea. RWIs generally are not severe, but in rare cases they can result in serious outcomes, including pneumonia, neurological damage and even death.

**Gastroenteritis**, a stomach ailment that causes diarrhea, nausea, vomiting and abdominal pain, is one of most commonly documented RWIs. It occurs when feces are released into the water and swallowed by other swimmers before having been killed by chlorine or another disinfectant.

**Cryptosporidium** is the parasite that causes most gastroenteritis outbreaks. It can remain infectious, even when exposed to disinfectant levels for several days; therefore, people suffering from diarrhea should not enter the water. Those diagnosed with cryptosporidiosis should not enter recreational water for 2 weeks after symptoms have ceased.

### Fecal Incident Response Recommendations

During orientation or in-service training, your facility should provide training on how to respond to accidental fecal releases (AFRs). If an AFR occurs, you should direct all patrons to leave all of the pools that use the same filtration system. Remove as much of the fecal material as possible with a scoop or net, trying not to break formed stool apart. Dispose of the feces using sanitary procedures. Do not vacuum the feces. Clean and disinfect the scoop and net and then place them in the pool during the following disinfection procedures.

#### Formed stool

- Continue to operate the filtration system.
- Adjust the pH to below 7.5.
- Raise the free chlorine level to at least 2 ppm.
- Maintain those levels for 25 minutes before re-opening the pool.

#### Diarrheal discharge

- Continue to operate the circulation system.
- Adjust the pH to below 7.5
- Raise the free chlorine level to at least 20 ppm.
- Maintain those levels for 13 hours.
- Backwash the filter.
- Return the chlorine level to normal levels before re-opening the pool.

#### Vomit in Pool Water

Patrons are unlikely to contract RWIs by swallowing, breathing or contacting pool water contaminated by vomit or blood. The vomit that a person produces after swallowing too much water probably is not infectious; however, if a person vomits and it contains any solid matter or food particles, you should respond the same way as you would to a formed stool incident.

To learn more about prevention practices, healthy swimming and recreational water topics, and to download free outbreak response toolkits and publications, visit the Centers for Disease Control and Prevention's (CDC) website at [cdc.gov/healthywater/swimming/](http://cdc.gov/healthywater/swimming/). You can learn even more by enrolling in a pool operator course.



# 2-3 WEATHER CONDITIONS

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Weather affects the safety of swimmers both outdoors and indoors. You should be aware of the weather conditions in your area and know how to act when severe weather occurs.

The National Oceanic Atmospheric Association (NOAA) Weather Radio All Hazards is a good source of information about potentially hazardous weather. This nationwide radio network provides detailed weather information 24 hours a day to most areas. A special radio receiver is needed to receive the signal and can be set to sound an

alarm when a warning is issued for a specific area. These radios have battery backup in case of power failure. Local up-to-date forecasts and weather warnings also are available from Internet sites, such as the National Weather Service at [nws.noaa.gov](http://nws.noaa.gov). Local radio stations, mobile apps, television channels and cable services also provide forecasts and emergency weather warnings.

Always follow your facility's EAP for severe weather conditions.

## Lightning and Thunderstorms

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In most parts of the United States, lightning and thunderstorms happen more often in the summer. Follow the facility's procedures for clearing patrons from the water before an impending storm. Patron or employee safety should never be put at risk. If a storm or other bad weather is predicted, stay alert for signs of the coming storm, such as thunder and lightning or high winds.

If thunder or lightning occur:

- Clear everyone from the water at the first sound of thunder or first sight of lightning. If you are in an elevated station, get down immediately. Move everyone to a safe area free from contact with water, plumbing or electrical circuits. For outdoor facilities, move everyone inside, if possible. Large buildings are safer than smaller or open structures, such as picnic shelters or gazebos.
- Keep patrons and staff out of showers and locker rooms during a thunderstorm as water and metal can conduct electricity.
- Do not use a telephone connected to a landline except in an emergency.
- Keep everyone away from windows and metal objects (e.g., doorframes, lockers).
- Watch for more storms and monitor weather reports on a radio or TV broadcast, weather radio or website.

If you are caught outside in a thunderstorm and there is not enough time to reach a safe building:

- Keep away from tall trees standing alone and any tall structures.
- Keep away from water and metal objects, such as metal fences, tanks, rails and pipes.
- Keep as low to the ground as possible: squat or crouch with the knees drawn up, both feet together and hands off the ground.
- Avoid lying flat on the ground; minimize ground contact.

## LIGHTNING

Lightning is the result of the build-up and discharge of electrical energy, and this rapid heating of the air produces the shock wave that results in thunder. In the United States, 25 million cloud-to-ground lightning strikes occur yearly. Lightning often strikes as far as 10 to 15 miles away from any rainfall, with each spark of lightning reaching over 5 miles in length and temperatures of approximately 50,000° F. Even if the sky looks blue and clear, be cautious. One ground lightning strike can contain 100 million volts of electricity. The National Lightning Safety Institute recommends waiting 30 minutes after the last lightning sighting or sound of thunder before resuming activities.

*Source: "National Weather Service Web," [www.lightningsafety.noaa.gov](http://www.lightningsafety.noaa.gov)*

## Heavy Rain and Hail

Heavy rain and hail can be dangerous. Rain can make it difficult to see the bottom of the pool or beneath the surface (Figure 2-19). If you cannot see the bottom of the pool, clear the pool of

all patrons. In addition, hail can cause serious physical injury. If it is hailing, clear patrons from the water and direct them to shelter.

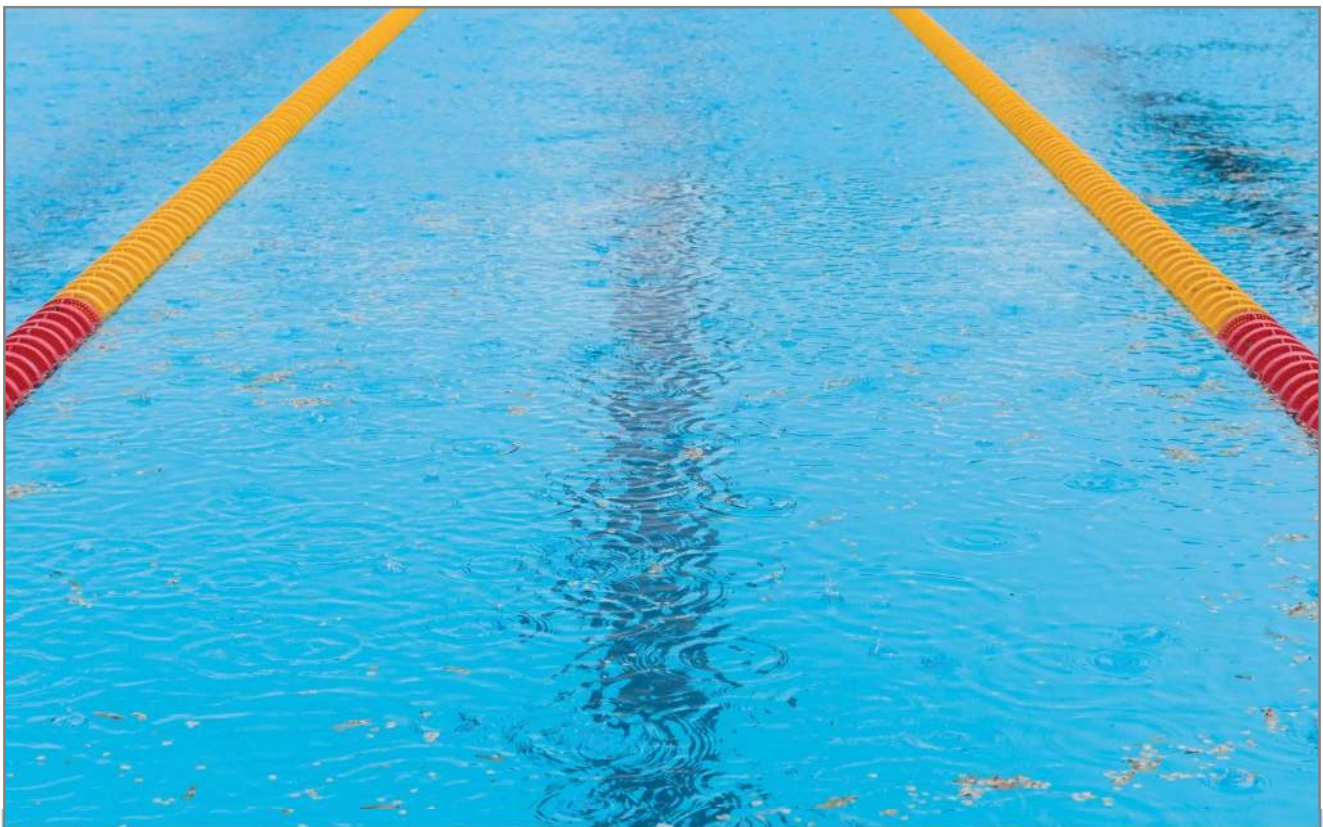


Figure 2-19 | Rain can obscure the bottom of the pool, and wind can cause leaves and debris to fall into outdoor pools.

## Tornadoes

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If the aquatic facility's locale is prone to tornadoes, facility staff should monitor weather forecasts. A **tornado watch** means that tornadoes are possible. Some facilities may decide to close once a watch is issued and before the arrival of wind, rain and lightning, which also may occur when tornado formation is likely. A **tornado warning** means that a tornado has been sighted or indicated on radar and is occurring or imminent in the warning area. Some communities activate sirens during a tornado warning. Everyone should take shelter immediately.

If a tornado warning is issued:

- Clear the water and surrounding area.
- Move everyone to the location specified in the facility's EAP, such as a basement or an inside area on the lowest level of a building.
- Keep everyone away from windows, doors and outside walls.
- Have everyone lie flat in a ditch or on a low section of ground if adequate shelter is unavailable at or near the facility.

If a tornado siren warning is heard, keep patrons in the safe location. Continue listening to local radio or television stations or NOAA Weather Radio for updated instructions from the authorities.

## High Wind

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High wind may cause waves or turbulence that makes it hard to see patrons in the water. Wind also increases the risk of hypothermia, especially for small children and the elderly. Safety guidelines for high wind include:

- Clearing the pool or waterfront if visibility is impaired by waves or increased turbidity.
- Moving all patrons and staff indoors.
- Securing all facility equipment that could be blown around and become dangerous, but only if it is possible and safe to do so.

## Fog

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In some areas, fog can occur at any time of the day or night with changing weather conditions. If fog limits visibility, your facility may need to close.

## Weather Conditions and Indoor Facilities

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Indoor facilities are safe from most weather problems but still may be affected. Severe weather can cause a power failure; therefore, the facility should have some type of portable or emergency lighting. In the event of a power failure, you should clear the pool because circulation and filtration of pool water will not be possible. If weather conditions cause safety concerns, you also should clear the deck. Follow the facility's EAP for severe weather conditions.



# 2-4 RULES AND REGULATIONS

Every aquatic facility establishes its own set of rules and regulations. Some of these regulations are required by the state or local health department, whereas others are determined by the

facility management. This course concentrates on common rules aimed at keeping patrons safer and preventing injuries; however, you should be familiar with and enforce all rules at your facility.

## Common Rules

Every facility should post its rules and regulations for patron behavior in plain view of all patrons and staff. Rules do not keep patrons from having fun. Rules exist for everyone's health and safety. Posted rules help patrons to enjoy their experience without endangering themselves or others. Facilities that attract numerous international guests or those that are located in multi-cultural communities also may post rules in other languages or use international signs or symbols.

Common rules posted at aquatic facilities may include:

- Swim only when a lifeguard is on duty.
- Swim diapers are required for small children or people with incontinence.
- No swimming with open or infected wounds.
- Obey lifeguard instructions at all times.
- No running, pushing or rough play.
- No hyperventilating before swimming underwater or breath-holding contests.
- No sitting or playing near or with drains or suction fittings.
- Dive only in designated areas (Figure 2-20).
- No glass containers in the pool area and locker rooms.
- No alcoholic beverages or drug use allowed.



Figure 2-20 | To help prevent injuries, post signs, markings and warnings to inform patrons about dangers.

## Waterfront Rules

Waterfront facilities often adopt additional rules that are specific to the waterfront environment. These may include:

- No playing or swimming under piers, rafts, platforms or play structures.
- No boats, sailboards, surfboards or personal watercraft in swimming areas.
- No running or diving head first into shallow water.
- No fishing near swimming areas.
- No umbrellas at the waterline. (Umbrellas present a surveillance obstruction.)
- No swimming in unauthorized areas.



## Waterpark Rules

At waterparks, rules and regulations should be posted, but they also may be recorded and played over a public address system. Rules may vary based on the type of attractions available. For example, U.S. Coast Guard-approved life jackets may be required on certain attractions but not allowed on others.

Waterparks should have signs posted at every attraction stating the depth of the water, height or age requirements and how to safely use the attraction. This is to prevent patrons from finding themselves in water that is deeper or shallower than they expected. For example, some pools at the end of a slide are shallow so that patrons can stand up, but others are very deep. Without signage to warn them, patrons may expect a shallow catch pool and be surprised to find themselves in deep water.

Additional rules for each attraction typically cover:

- The minimum or maximum number of people allowed on an attraction or a tube at a time
- The maximum height or age requirements in areas designated for small children
- The minimum height or weight requirements for patrons using an attraction (Figure 2-21)
- Common rules for winding rivers, such as:
  - Enter and exit the winding river only at designated places.
  - No jumping or diving into the water.
  - No people on shoulders.
  - No climbing on any features.
  - Stay in tubes at all times if tubes are used.
  - No walking or swimming in the winding river if tubes are used.
  - Only one properly fitted life jacket per patron.
  - No stacking of tubes or life jackets.
  - No forming chains of tubes or life jackets.
  - Only one patron allowed per tube, except for an adult holding a small child. The child must be wearing a U.S. Coast Guard-approved life jacket in case the adult tips over.

- Common rules for waterslides, such as:
  - Enter, ride and exit the slide feet first.
  - No stopping in the slide, and no running, standing, kneeling, rotating or spinning on the slides. Keep hands inside the slide.
  - No metal objects, locker keys, jewelry, metal snaps/zippers, eyewear or watches, including metal rivets, buttons or fasteners on swimsuits or shorts.
  - No aqua socks or aqua shoes, eyeglasses, sunglasses or goggles.

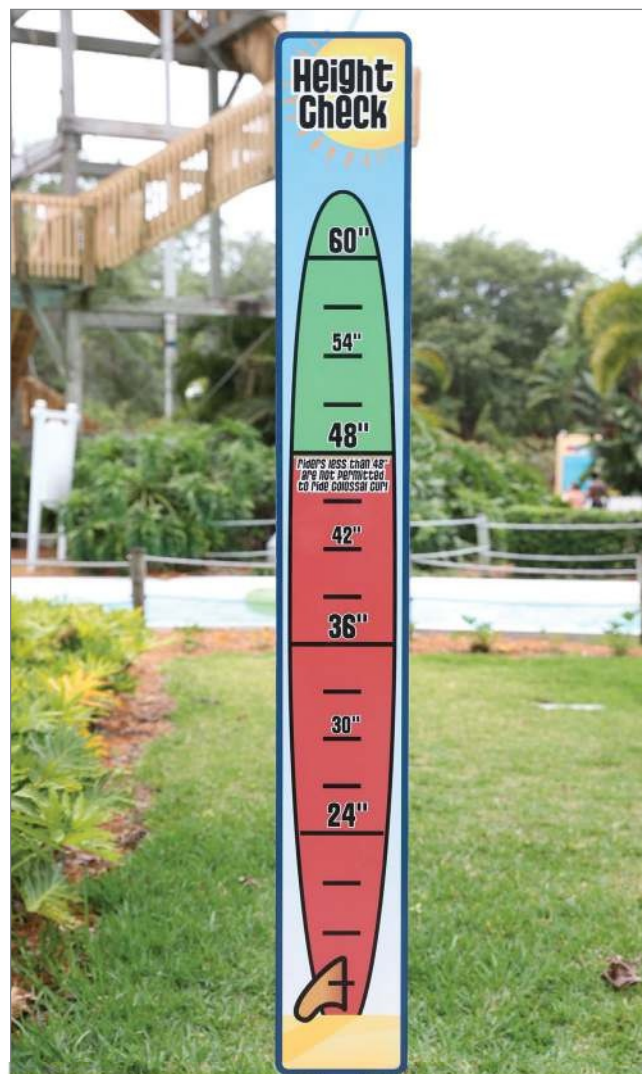


Figure 2-21 | Use a measuring pole or line to ensure patrons are the proper height to use a ride.

## Rules for Facility Equipment and Structures

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Other rules for specific equipment and structures depend on the facility and may include:

- One person at a time on a ladder.
- Do not sit or hang on lifelines or lane lines.
- Do not climb on lifeguard stands or towers.
- Starting blocks may be used only by swim team members in scheduled practices, competitions and instruction when supervised by a certified coach or instructor.

## Diving Area Rules

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Rules for diving boards and dive towers should be posted in the diving area. The rules may include:

- Patrons must demonstrate their swimming ability before entering deep water.
- Only one person on the diving board at a time, and only one person on the ladder at a time.
- Look before diving or jumping to make sure the diving area is clear.
- Only one bounce allowed on the diving board.
- Dive or jump forward straight out from the diving board.
- Swim immediately to the closest ladder or wall.

## Rules for Spas, Hot Tubs and Therapy Pools

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Spas, hot tubs and therapy pools are popular, but their hazards include drowning, hyperthermia (high body temperature) and disease transmission.

Rules common to these areas include:

- Use only when a lifeguard is present.
- Shower with soap and water before using.
- People with heart disease, diabetes, high or low blood pressure, seizures, epilepsy or other medical conditions are cautioned against using a spa or hot tub.
- Pregnant women and young children should seek their healthcare provider's approval before using a spa or hot tub.
- No unsupervised use by children.
- Do not use the spa or hot tub while under the influence of alcohol or other drugs.
- No diving, jumping or rough play in the spa or hot tub.
- Do not allow anyone to sit or play near or with the drain or suction fittings.
- Secure or remove any loose or dangling items, including hair, swimwear and jewelry.
- Limit time in the spa to 10 minutes. Patrons then may shower, cool down and return again briefly. Prolonged use may result in nausea, dizziness, fainting or hyperthermia.
- Remove swim caps before entering the spa or hot tub.

# 2-5 MANAGEMENT AND SAFETY

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As a lifeguard, your job is to follow and enforce your facility's rules and regulations. The job of your facility's management is to ensure that the facility is in compliance with local, state and federal regulations and to make sure that you are enforcing the rules correctly. Management is responsible for:

- Creating, reviewing and revising a facility's policies and procedures, rules and regulations, and EAPs as needed.
- Addressing unsafe conditions.
- Complying with federal, state and local regulations for facility operations and employment.
- Maintaining records on the facility and employees.
- Assisting after an emergency.

## Policies, Regulations and EAPs

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Facility management is responsible for ensuring that policies, rules and procedures, and EAPs are in place. Management also is responsible for reviewing and revising these plans as necessary

to address any changes that may have occurred, such as new programming, new features or attractions, or emerging codes and industry standards.

## Addressing Unsafe Conditions

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Lifeguards work with management to address unsafe conditions at a facility. Management tells lifeguards what to check during safety checks and relies on them to find and report dangers. When an unsafe condition is found and reported, management is responsible for correcting the

condition. You should always report unsafe conditions to your supervisor. In some instances, you may be asked to take action to limit use of an unsafe area or to help correct the unsafe condition, such as by sweeping up broken glass or by removing a piece of equipment from use.

## Complying with Regulations

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Government regulations protect patrons and employees. The facility and staff must comply with all regulations. Federal, state and local regulations affect the operation of aquatic facilities in many ways, such as lifeguard certification requirements, facility design and safety features, pool capacities, staff training requirements and lifeguard competencies, ratio of lifeguards to patrons, water sanitation procedures, first aid equipment and supplies, lifeguarding equipment and diving depths.

Regulations are specific to individual areas. You should be familiar with those that affect your facility. Facility management should provide this information during orientation or in-service training.

The following sections describe some federal regulations that may affect you.



## Age Limitations for Employment

Federal and state departments of labor set conditions on the number of hours and the types of tasks that employees younger than 18 years are allowed to perform. The requirements typically are more stringent for 15 year olds than for those 16 and 17 years of age. A facility's policy and procedures manual should cover how these regulations affect your duties.

## Hazard Communication Standard

Federal regulations protect people from chemical hazards in and around a facility. For example, the Hazard Communication Standard is designed to prevent injury and illness caused by exposure to hazardous chemicals.

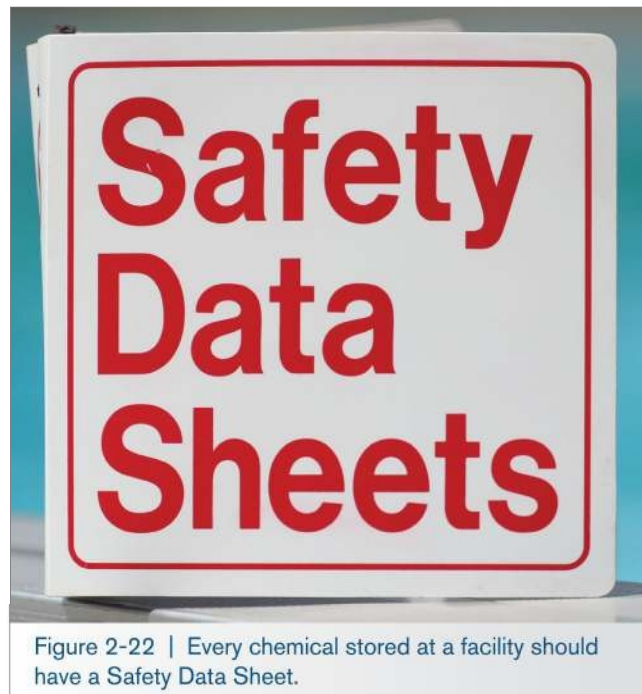
Employees must be trained about the chemicals stored and used in the workplace for jobs that involve handling such items. Each chemical has an information sheet called a **Safety Data Sheet (SDS)**, and the information for each hazardous chemical must be easy to find and use. Each SDS includes procedures for handling each substance and provides information about the dangers of exposure as well as first aid and medical follow-up if exposure occurs. Be sure to learn about all hazardous materials at your workplace and know where to find and access your facility's SDSs (Figure 2-22). Employees have a right to know:

- Which hazardous chemicals are in the facility.
- Where those chemicals are stored in the facility.
- The specific dangers of those chemicals.
- How to identify chemical hazards in the facility.
- How to protect themselves and others from being exposed to hazardous chemicals.
- What to do if they or others are exposed to such hazards.

Hazardous chemicals must be handled properly and with care, and stored properly, as specified in the Hazard Communication Standard. Unauthorized personnel should be kept away from chemical storage areas.

## Bloodborne Pathogens Standard

The federal Occupational Safety and Health Administration developed the Bloodborne Pathogens Standard to reduce the risk of disease spreading from one person to another. This standard helps to protect employees from contact with body fluids or other potentially infectious materials that may contain disease-causing bacteria and viruses, called bloodborne pathogens. The facility's management should help to protect employees from being exposed to bloodborne pathogens and let employees know what to do if an exposure occurs. Additional information is provided in Chapter 7, Before Providing Care and Victim Assessment.





## Blog Post #2 | Preparing for Opening Day

**May 25th 8:45 pm**

I can't believe it's almost opening day at the pool. This year is flying by! Today I was pressure-washing the deck, doing some last-minute prep, when I saw Emma with someone from the Red Cross. They were walking around with a tablet, looking at EVERYTHING. They inspected and took notes on items throughout the facility including our pool signs, rescue equipment, in-service training paperwork and even the safety check lists that we fill out every day. I asked Emma about it later, and she said it was part of the Aquatic Examiner Service (AES), an operations assessment. Basically, they talk about ways to make our pool safer.

After the assessment, Emma gets a report that outlines the things we do really well and some stuff we need to work on. For example, the examiner suggested that we move our AED from Emma's office to the lifeguard office connected to the pool so that it's more easily accessible. She also told me that when the examiner shows up unannounced later this summer, they will walk around again to see if we have made any changes based on their initial recommendations. I'm still a little nervous knowing that an undercover examiner could show up any day, but it will certainly keep us rescue-ready. As long as we do what we practice at our in-services, we should get through this AES thing, no sweat!

## 2-6 WRAP-UP

Your top priority as a lifeguard is helping keep patrons safe and free from injury so that they can safely enjoy aquatic activities. Lifeguards prevent injuries by enforcing the safety rules. They also prevent injuries by conducting safety inspections of the facility, the water, equipment

and attractions. Lifeguards also need to recognize and respond to the changing water conditions and weather conditions that can occur. Together with management and your fellow lifeguards, your job is to set the stage for this safe experience by helping to create and maintain a safe aquatic facility.

## **BENCHMARKS FOR LIFEGUARDS**

Lifeguards should:

- Dress in full uniform.
- Be equipped and ready for rescue.

## **BENCHMARKS FOR LIFEGUARDING OPERATIONS**

Managers should ensure that:

- The facility is in compliance with the law and unsafe conditions are addressed.
- The facility has and maintains a facility-specific facility safety checklist.
- The appropriate employees on-site are trained in pool operations, water quality testing and water treatment.
- The facility has inclement weather and recreational water illness policies and procedures.





## Chapter 2 Review

**1. What items are considered to be personal protective equipment for a lifeguard?**

**2. What equipment should be worn or carried by a lifeguard at all times while on duty? List at least two and include the reason(s) why this equipment should be worn or carried.**

1)

2)

**3. What safety equipment/items should be easily accessible for a lifeguard while on duty? List at least two and describe how/when each item is used.**

1)

2)



## Chapter 2 Review

### 4. As a lifeguard, you are responsible for:

- A** | Ensuring that your facility is in compliance with local, state and federal regulations.
- B** | Creating and reviewing your facility's policies and procedures manual.
- C** | Consistently enforcing your facility's rules and regulations.
- D** | Creating rules, regulations and emergency action plans.

### 5. List five common rules and regulations often posted at an aquatic facility.

- 1)
- 2)
- 3)
- 4)
- 5)

### 6. Explain what it means to be “equipped and rescue-ready?”



# Chapter 2 Review

7. Identify at least two reasons why each lifeguard in the images below is not equipped and rescue-ready and indicate what can be done to improve each situation.



## QUESTION FOR FUTURE GUIDED DISCUSSION

Effective surveillance includes several elements. What are these elements and why are they instrumental to keeping patrons safe?





# Chapter 2 Review

## ADDITIONAL REVIEW QUESTIONS FOR WATERFRONT LIFEGUARDS:



**1. Which list of typical safety checklist items, along with others, applies to a lakefront swimming area?**

- A** | Water chemistry, circulation system, drain covers, starting blocks
- B** | Bottom conditions, pier attachments, buoys, safety lines
- C** | Emergency shut offs, tubes, communication between ride dispatch and landing
- D** | Wave height, tide charts, rip currents, beach flags

**2. Which list of typical rules, along with others, applies to a lakefront swimming area?**

- A** | No diving in shallow water, no running on pool deck, shower before entering the water
- B** | Ride slides feet-first, stay on tubes, observe minimum height or weight requirements
- C** | No swimming under piers, no fishing near swimming area
- D** | Shower before entering, limit time in high temperature water, remove swim caps



# Chapter 2 Review

## ADDITIONAL REVIEW QUESTIONS FOR WATERPARK & AQUATIC ATTRACTION LIFEGUARDS



**1. In a waterpark setting, what additional items might be included in a safety checklist?**

**2. Why should waterparks have signs posted at every attraction stating the water depth?**

**3. What rules are typically covered for waterpark attractions?**

**4. What are some factors that make lifeguarding waterparks different than a typical pool?**

